



Geodynamic modelling of non-volcanic rifted margins: sedimentation process and effects

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Non-volcanic rifted margins (NVRMs) are characterized by an anomalous lack of magmatism and a wide continental-ocean transition which has been interpreted as an expanse of exhumed and serpentinized mantle. NVRMs are represented all over the world as in Labrador Sea, Southeast Australia, Newfoundland, and West Iberian Margin (WIM), where a serpentinized peridotite ridge is found. Erosion and sedimentation are surficial processes that redistribute material along the margins, changing the forces along the margin and affecting its thermal structure. In order to study coupled mantle dynamics and sedimentation processes during rifting, we used a modified version of the dynamic 2D code MILAMIN (Dabrowski et al. 2008). Our modified version includes a free surface together with a free-surface stabilization algorithm to generate stable topographies, strain softening to simulate faulting, serpentinization, magmatism, erosion and sedimentation. Erosion and sedimentation algorithm is based on diffusion and transport equations in 1D. The code allow us to investigate how sedimentation process conditions the architecture of the margins during rifting and in which magnitude the width of the margins and the height of the rift shoulders are affected by surficial processes. Furthermore, we can study how sediments influence the temperature distribution and evolution and, ultimately, the rheology of the crust during rifting. We are also working on modelling sedimentation with high resolution meshes to try to reproduce break-up unconformities and to study the thermal evolution of the sediments.